

AMENDMENTS TO THE CLAIMS

Following is a listing of all claims in the present application, which listing supersedes all previously presented claims:

Listing of Claims:

1. (Currently Amended) A method for fabricating a film bulk acoustic resonator, the method comprising:

providing a dielectric layer on a substrate;

providing a sacrificial layer on a portion of the dielectric layer, while leaving a portion of the dielectric layer exposed to form an exposed dielectric layer;

providing a bottom electrode on the sacrificial layer and on the exposed dielectric layer, the providing of the bottom electrode including depositing a conductive material on the sacrificial layer and on the exposed dielectric layer, the conductive material on the exposed dielectric layer forming a base section and the conductive material on the sacrificial layer forming an overhanging section;

providing a piezoelectric layer on the bottom electrode;

providing a top electrode on the piezoelectric layer; and

removing the sacrificial layer.

2. (Original) The method as claimed in claim 1, further comprising providing a second dielectric layer on the top electrode.

3. (Original) The method as claimed in claim 2, further comprising adjusting a thickness of the second dielectric layer in accordance with a desired resonance frequency.

4. (Cancelled)

5. (Currently Amended) The method as claimed in ~~claim 4~~ claim 1, wherein the providing of the bottom electrode further includes partially removing the conductive material forming the base section, so that a width of the conductive material forming the base section is smaller than a width of the conductive material forming the overhanging section; and

wherein the providing of the top electrode includes depositing another conductive material on the piezoelectric layer and on the exposed dielectric layer, and patterning the another conductive material on the dielectric layer so that the top electrode includes a pad positioned in an area of the exposed dielectric layer where the conductive material forming the base section has been removed, the pad being spaced from the conductive material remaining in the base section.

6. (Original) The method as claimed in claim 5, wherein the providing of the piezoelectric layer further includes depositing a piezoelectric material on the bottom electrode and on the exposed dielectric layer and patterning the piezoelectric material on the exposed dielectric layer to include a portion of piezoelectric material in an area of the exposed dielectric layer where the conductive material forming the base section has been removed and separate from an area of the dielectric layer in which the pad is to be formed.

7. (Original) The method as claimed in claim 1, wherein the removing of the sacrificial layer forms an air gap between the bottom electrode and the dielectric layer.

8. (Original) The method as claimed in claim 1, wherein an upper surface of the sacrificial layer is higher than an upper surface of the dielectric layer.

9. (Currently Amended) ~~The method as claimed in claim 1, further comprising,~~
~~before the providing of the dielectric layer, ; A method for fabricating a film bulk acoustic resonator, the method comprising:~~

forming a cavity on [[the]] a substrate;

providing a dielectric layer on the substrate;

providing a sacrificial layer on a portion of the dielectric layer, while leaving a portion of the dielectric layer exposed to form an exposed dielectric layer;

providing a bottom electrode on the sacrificial layer and on the exposed dielectric layer;

providing a piezoelectric layer on the bottom electrode;

providing a top electrode on the piezoelectric layer; and

removing the sacrificial layer,

wherein the providing of the bottom electrode includes depositing a conductive material on the exposed dielectric layer to form a base section and on the sacrificial layer to form an overhanging section, and partially removing the conductive material forming the base section, so that a width of the conductive material forming the base section is smaller than a width of the conductive material forming the overhanging section; and

the providing of the top electrode includes depositing another conductive material on the piezoelectric layer and on the exposed dielectric layer, and patterning the another conductive material so that the top electrode includes a pad positioned on the exposed

dielectric layer where the conductive material forming the base section has been removed, the pad being spaced from the conductive material forming the base section.

10. (Currently Amended) The method as claimed in ~~claim 1~~ claim 9, wherein the providing of the sacrificial layer includes filling the cavity with a sacrificial material.

11. (Original) The method as claimed in claim 10, wherein the filling of the cavity includes depositing the sacrificial material on the dielectric layer and the cavity and planarizing the sacrificial material to provide the exposed dielectric layer.

12. (Original) The method as claimed in claim 11, wherein the planarizing includes a chemical mechanical polishing process.

13. (Original) The method as claimed in claim 9, further comprising providing a second dielectric layer on the top electrode.

14. (Original) The method as claimed in claim 13, further comprising adjusting a thickness of the second dielectric layer in accordance with a desired resonance frequency.

15-24. (Cancelled)

25. (New) A method for fabricating a film bulk acoustic resonator, the method comprising:

providing a dielectric layer on a substrate;

providing a sacrificial layer on a portion of the dielectric layer, while leaving another portion of the dielectric layer exposed to form an exposed dielectric layer;

providing a bottom electrode on a portion of the sacrificial layer and on the exposed dielectric layer;

providing a piezoelectric layer on the bottom electrode;

providing a top electrode on the piezoelectric layer; and

removing the sacrificial layer.

26. (New) The method as claimed in claim 25, further comprising providing a second dielectric layer on the top electrode.

27. (New) The method as claimed in claim 26, further comprising adjusting a thickness of the second dielectric layer in accordance with a desired resonance frequency.

28. (New) The method as claimed in claim 25, wherein the providing of the bottom electrode includes depositing a conductive material on the sacrificial layer and on the exposed dielectric layer, the conductive material on the exposed dielectric layer forming a base section and the conductive material on the sacrificial layer forming an overhanging section.

29. (New) The method as claimed in claim 28, wherein the providing of the bottom electrode further includes partially removing the conductive material forming the base section, so that a width of the conductive material forming the base section is smaller than a width of the conductive material forming the overhanging section; and

wherein the providing of the top electrode includes depositing another conductive material on the piezoelectric layer and on the exposed dielectric layer, and patterning the another conductive material on the dielectric layer so that the top electrode includes a pad positioned in an area of the exposed dielectric layer where the conductive material forming the base section has been removed, the pad being spaced from the conductive material remaining in the base section.

30. (New) The method as claimed in claim 29, wherein the providing of the piezoelectric layer further includes depositing a piezoelectric material on the bottom electrode and on the exposed dielectric layer and patterning the piezoelectric material on the exposed dielectric layer to include a portion of piezoelectric material in an area of the exposed dielectric layer where the conductive material forming the base section has been removed and separate from an area of the dielectric layer in which the pad is to be formed.

31. (New) The method as claimed in claim 25, wherein the removing of the sacrificial layer forms an air gap between the bottom electrode and the dielectric layer.

32. (New) The method as claimed in claim 25, wherein an upper surface of the sacrificial layer is higher than an upper surface of the dielectric layer.

33. (New) The method as claimed in claim 25, further comprising, before the providing of the dielectric layer, forming a cavity on the substrate.

34. (New) The method as claimed in claim 33, wherein the providing of the sacrificial layer includes filling the cavity with a sacrificial material.